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This report describes the use of the Soviet force effectiveness model. It describes the various options available to the user for making weapons characteristics and force level changes to simulate alternative estimates.

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FOR MEDIUM- TO LONG-RANGE ESTIMATES:
USER'S MANUAL FOR
SOVIET FORCE EFFECTIVENESS MODEL (U)

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Sponsored by:

Defense Advanced Research Projects Agency

10 John J. McIlroy
Leo Hazlewood

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PREFACE

This document is one of a series of reports describing the research activities undertaken to complete Defense Advanced Research Projects Agency (ARPA) supported contract number MDA903-76-C-0255, entitled "Developmental Methodologies for Medium- to Long-Range Estimates." These reports describe the project's empirical, methodological, substantive, technical, and theoretical contributions.

The Final Technical Report is presented as a set of documents rather than a single report. They are

- Executive Summary,
- Long-Range Regional Forecasting Models,
- The Soviet Force Effectiveness Model,
- User's Manual for the Long-Range Regional Forecasting Models,
- User's Manual for the Soviet Force Effectiveness Model, and
- Program Documentation for the Soviet Force Effectiveness Model.

The first three volumes substantively describe all research tasks, provide the rationale for research decisions, and report important findings. The remaining four volumes document the two computer programs delivered to the Defense Intelligence Agency/Directorate for Estimates (DIA/DE) for installation on the Defense Intelligence Agency On-Line System (DIAOLS).

The Executive Summary briefly describes the overall project. The volumes on the regional forecasting model and the force effectiveness model, by far the most substantive and complex of the documents, discuss the design and development of each of these models, respectively. The first reviews the regional models, identifies areas where improvements were made for DIA/DE, and presents the findings from sensitivity tests and computer simulations for Europe, the Middle East, Latin America, and Africa. The second fully discusses the development of the Soviet force effectiveness model. The volume is classified.

The remaining four volumes focus on the two computer models delivered to DIA/DE. A user's manual and program documentation have been written that provide all necessary information for using and maintaining the models.

ACKNOWLEDGEMENTS

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PROJECT OVERVIEW

This User's Manual describes one of two important analytical technologies developed for the Defense Intelligence Agency/Directorate for Estimates (DIA/DE) under Defense Advanced Research Projects Agency (ARPA) Contract No. MDA903-76-C-0255, designed to improve the capability to forecast important factors that define the international military environment and have implications for long-range intelligence estimates. Two user-interactive computer models were developed in this project. The first enhances existing Department of Defense forecasting capabilities (CACI, 1975b, 1974, 1973) by applying social science research methodologies to long-range forecasting of important economic, military, and political variables. The second major product is a model that enables DIA/DE to measure total Soviet force effectiveness for use in estimative intelligence. Together, these efforts constitute technological innovations that enhance the reliability, accuracy, relevance, timeliness, and, therefore, the credibility of long-range forecasting for defense intelligence estimates and planning. This manual describes the user-initiated procedures for the regional long-range forecasting models.

This project had four objectives:

1. Refine and equalize the existing long-range forecasting models for Europe, the Middle East, Latin America, and sub-Saharan Africa, previously developed under ARPA contracts for the Joint Chiefs of Staff (JCS/J-5).

2. Enrich the existing models by including the People's Republic of China as a major actor in the superpower simulation capability and adding the option to simulate the impact of political regime changes.

3. Develop a model to estimate future Soviet force effectiveness based on the Defense Intelligence Projections for Planning (DIPP) document, including the capacity of the Soviet Union to improve the quality and quantity of its major weapon systems and pose increased threats to U.S. interests.

4. Implement the enriched forecasting models and the Soviet force effectiveness model on the Defense Intelligence Agency On-Line System (DIAOLS) with a user-interactive capability to permit DIA analysts to forecast alternative futures by altering data, superpower behavior, or regime type, and/or forecasting parameters to simulate different courses of action.

ACCOMPLISHMENTS

All phases of the research were completed so that offices with established DIAOLS linkages can access either the CACI regional forecasting models or the Soviet force effectiveness model. As proposed,

- The regional forecasting models have been standardized at comparable complexity for Europe, the Middle East, Latin America, and sub-Saharan Africa, and China has been added to the superpower influence set;

- The capability to influence forecasts by simulating regime changes was added and the models were made user-interactive;

- Sensitivity tests and simulations have been performed with each of the models, and the three programs associated with the regional forecasting models (the preprocessor, forecasting program, and report generator) have been installed on DIAOLS;

- The Soviet force effectiveness model has been developed using information available in the DIPP on the number and characteristics of Soviet weapon systems;

- An equation was developed that selectively aggregates weapon characteristics, interfaces them with DIPP force level information, and generates estimates of Soviet force effectiveness;

- A program for the Soviet force effectiveness model that permits user-interaction with the weapons system data and alternative assumptions about the growth and structure of Soviet forces has been implemented on DIAOLS and is presently available.

The two computer models considerably enhance DIA/DE's forecasting capability, as intelligence estimators can now generate and analyze long-range alternative futures for Europe, the Middle East, Latin America, and Africa, or alternative estimates of Soviet force effectiveness. In each case, the analyst has available a computer technology that permits structures and assumptions of either model to be altered to reflect an insight about the phenomenon being studied. Furthermore, the intelligence estimator has guidelines on how to interface the long-range regional forecasts with estimates of total Soviet force effectiveness. As analysts become more familiar with both models, their sensitivities to the implications of the generated forecasts and estimates will increase. More questions will eventually be asked that will tax the limits of the models. Finally, as they gain currency throughout the intelligence community, demands for increased sophistication and refinement can be expected.

The models produced by this research integrate traditional academic approaches and complex quantitative methodologies to develop tools that can improve intelligence estimates. In addition, the research interfaced qualitative and quantitative techniques that are intermingled in any modeling effort. It also produced vastly improved, standardized, and user-interactive versions of CACI's regional forecasting models.

Moreover, it produced the first generation of a user-interactive Soviet force effectiveness model that relies on highly sophisticated intelligence data. The lessons learned in completing these two major efforts should be intensely scrutinized by potential users.

CACI's past efforts in developing the regional forecasting models have involved collecting and organizing statistical information, applying statistical analytical techniques, examining the implications of data error, designing and constructing forecasting models, designing and developing user-interactive programs, applying regional versus country-specific forecasting equations, and so on. Each effort has clearly improved the reliability and validity of the regional forecasting models, thus advancing considerably the credibility of forecasts.

Even with these advances, continuing technology assessments suggest a number of unmet, yet very necessary, steps which must be taken to ensure that the best possible regional models are developed for the national security community. Some of these are

- Develop worldwide medium- to long-range estimative intelligence technologies. Currently, no model exists for Asia. Limited effort would be required to expand the current system to include that region. Further, the current structure contains the United States, the Soviet Union, and the People's Republic of China as influential superpowers. This set could, and should, be expanded to include Japan and the major Western European countries.

- Develop stochastic mechanisms for superpower interaction simulation. While including additional superpower influences is a substantial step toward improving the realism of a worldwide model, only the independent

effects of the superpowers will have been modeled. The action-reaction nature of superpower behaviors and the impacts of such activity on other nations can now only be indirectly simulated. These aspects can and should be modeled in greater detail.

- Explore and apply methodologies to enrich regional forecasts. Constraining the analyst's perspective to define sets of countries geographically has, to some extent, made modeling more difficult. One solution is to estimate country-specific parameters, an approach that has worked extremely well with the economic sector of the current model. However, when data are insufficient or inadequate, the relationships among environmental variables should be modeled for similar types of countries. These procedures should produce increasingly accurate forecasts.

The lessons learned from modeling Soviet force effectiveness should also be intensely evaluated. As expected, the data in the DIPP are more readily available for larger weapons. Consequently, a force effectiveness model favoring the available data was developed. Thus, the effectiveness of general purpose forces (naval, tactical air, and ground) is less well assessed by the current model. During the project, CACI continually clarified DIA/DE's specific interests on Soviet force effectiveness. For example, the distribution of off-line and on-line systems became important, as did the distinction between nuclear and non-nuclear weapons. Furthermore, distinctions as to the role of specific weapons (either offensive or defensive) sometimes became important in considering weapon effectiveness.

The current Soviet force effectiveness model discriminates between nuclear and non-nuclear weapons and off-line and on-line systems. It is also capable of aggregating different weapon systems to simulate specific missions. Other advances can readily be made.

- Identify forces by geographical region, permitting combinations of offensive and defensive capabilities in specific locations such as Europe, South Asia, and China.

- Evaluate Soviet force effectiveness of weapons in both an offensive and defensive role. This would considerably enhance the intelligence estimator's knowledge of the dimensions of force effectiveness and the overall effectiveness of specific forces analyzed in the DIPP.

- Develop measures of U.S. force effectiveness for offensive and defensive systems, located in selected geographical areas, to compare with Soviet force effectiveness measures. Such an analysis could eventually develop new technologies for quantitative net assessment.

Technology assessment is an ongoing process in which model builders and model users review and try to improve the range and quality of existing products. CACI's long-range forecasting models have been subjected to precisely this kind of scrutiny. This discussion identified new areas where further improvements should be made. The same is true of the Soviet force effectiveness model. As more users become acquainted with it, technology assessment will begin. The resulting feedback will contribute to the growth that must continue if forecasting and estimation capabilities within the Department of Defense are to become part of the policy-planning process in the national security community.

The development and use of the Soviet force effectiveness model are detailed in a classified companion volume (CACI, 1976k). This manual guides the user through a typical computer run, showing the program's options, pitfalls, and limitations. It gives the user a general impression of the logic of the computer program and provides details on using the models. Finally, two typical forecasting runs are presented.[1]

GENERAL STRUCTURE

The Soviet force effectiveness model calculates theoretical weapon effectiveness (TWE) measures for lethal weapons[2] identified and described in the Defense Intelligence Projections for Planning (DIPP). The TWE is then multiplied by the force levels (numbers of weapons systems) in the appropriate DIPP tables to generate theoretical force

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[1] Because the Soviet force effectiveness model is on the Defense Intelligences Agency On-Line System (DIAOLS) and uses data residing in the Defense Intelligence Projections for Planning On-Line System (DIPPOLS), all computer runs are classified. Including computer printouts from typical exercises would require classification of this manual. To circumvent this problem, upper case X's are used to represent numbers, such as XXX.XX. Similarly, information tables also cannot be printed. They are presented in a stylized, empty format.

[2] These weapons were identified a priori after a set of criteria were agreed upon by the Defense Intelligence Agency/Directorate for Estimates (DIA/DE) and CACI analysts. Only weapons systems capable of causing death or destruction are included. The list consists of over 200 weapons systems for the current model. It can be expanded when new systems are brought on-line. The data file simply needs to be updated and reloaded onto DIAOLS.

effectiveness (TFE) measures. Formulae for calculating these values are presented in Figure 1.

In addition to aggregating force levels and force characteristics by DIPP table, the model permits the user to aggregate the weapons by several missions: strategic intercontinental attack, strategic peripheral attack, air defense, conventional peripheral attack, and conventional force projection. It also allows the user to discriminate between on-line/off-line and nuclear/non-nuclear systems. Thus subsets of weapons systems can be singled out for specific handling. Judicious use of all available options should enable the intelligence estimator to generate accurate and credible assessments.

Figure 2 presents the general flow of the model,[2] describing signing on, selecting the mode (TABLE or MISSION) in which the user chooses to work, making changes, reviewing weapons sytems, and calculating the subtotals (TWEs) and total (TFE) for 10 years.[4] The computer program for the Soviet force effectiveness model, CONPROG1, is a self-contained, user-interactive processor of information from a weapons characteristics data file and is in the DIPPOLS.[5]

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[3] A detailed, annotated presentation of all aspects of computer programming the model can be found in CACI (1976o).

[4] Currently, the 10-year period covers 1972, an arbitrarily selected starting point common throughout all tables, to 1981. It can be updated each year with minor program changes. See CACI (1976o) for system documentation on the Soviet force effectiveness model.

[5] The user should be aware that the measures of force effectiveness generated by the model are wholly dependent on the data contained in the weapons characteristics file. Thus, the generality of the model should always be kept in mind since the results are clearly a function of the

(1) TWE = Lethality x Accuracy x Survivability

(1a) Lethality = Yield x Rate of Fire

(1b) Accuracy = 1/Circular Error Probable

(1c) Survivability = Reliability x Mobility x Vulnerability

In operational terms:

$$(2)\ TWE_i = \left[\underbrace{\left[n_i (\alpha Y_i) LO_i \right]}_{\text{Lethality}} \underbrace{\left[\frac{1}{CEP_i} \right]}_{\text{Accuracy}} \underbrace{\left[(REL_i) \left(\frac{MOB_i}{MaxMOB_{FC_i}} + 1 \right) \left(\frac{PVN_i}{MaxPVN_{FC_i}} \right) \right]}_{\text{Survivability}} \right]$$

where:

Y_i = yield in kilotons (KTs) of weapon (i)

α = scalar based on yield in KTs where $\alpha = (Y_i - 0.01)^{\frac{1}{3}}$

n_i = number of weapons of a specific type

LO_i = load

CEP_i = circular error probable

REL_i = reliability in percent

MOB_i = speed of weapons system

$MaxMOB_{FC_i}$ = top speed for the fastest weapon system in a specific force component (FC_i)

PVN_i = physical vulnerability

$MaxPVN_{FC_i}$ = most invulnerable weapon system

(3) TFE = Force Level x TWE

where:

Force Level = Number of weapon systems as presented in the Defense Intelligence Projections for Planning (DIPP) document.

Figure 1. Theoretical Force Effectiveness (TFE) Equation

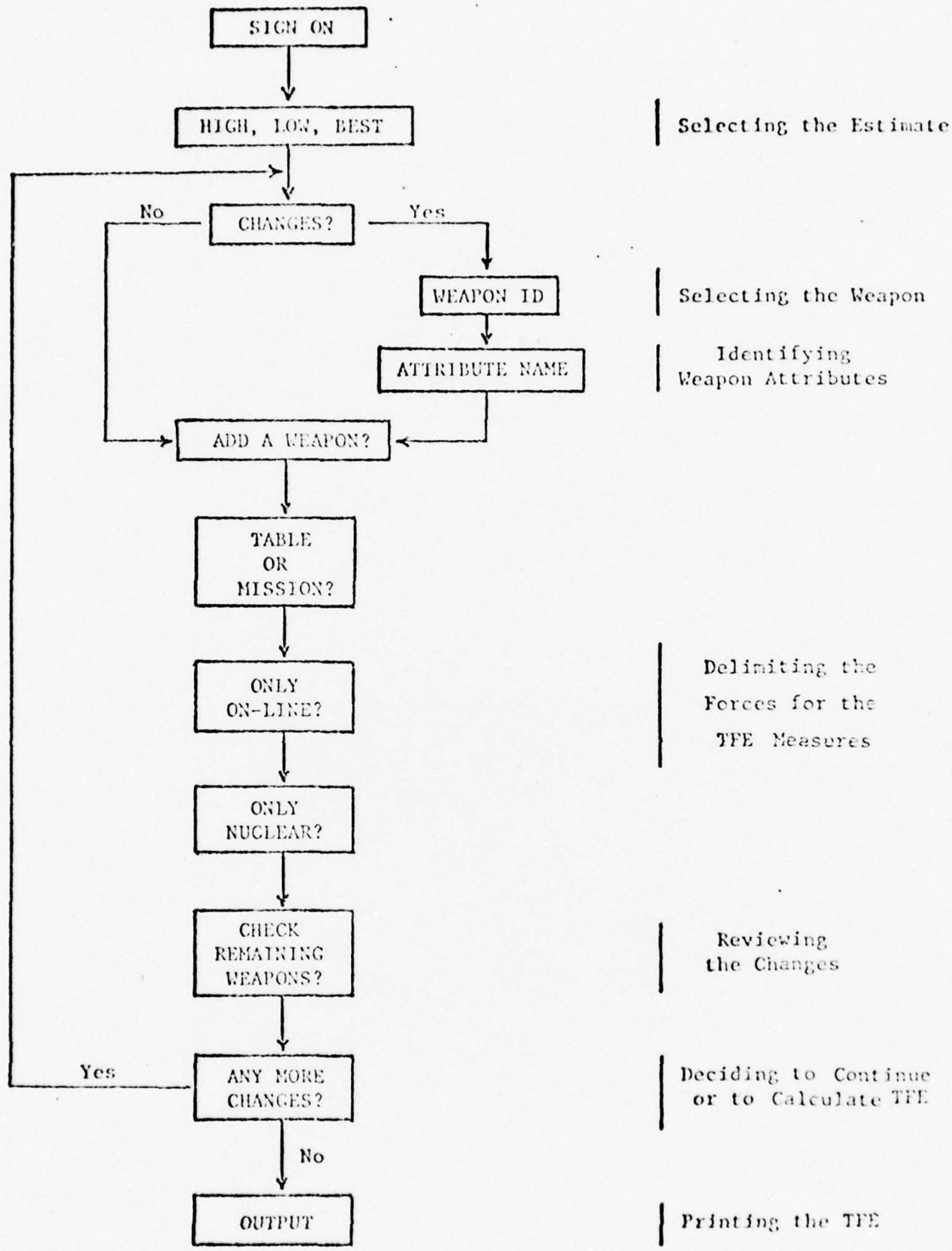

Figure 2. General Flow Diagram of Soviet Force Effectiveness Model

SIGNING ON TO THE COMPUTER SYSTEM

The first step in using the Soviet force effectiveness model is for the user to sign-on (log on) to a terminal that accesses the DIAOLS. Once properly signed on to DIAOLS, the user is queried by the terminal

SYSTEM?

The user responds[6]

FORTRAN

The computer then prompts

OLD OR NEW-

The user then types on the same line

OLD, CONPROG1

---

terms in the TWE equation. If a value is incorrect or receives new, better information, it should immediately be incorporated into the data files.

Every datum that is considered imprecise or estimated by coders is annotated with an asterisk. When the user corrects a datum with an asterisk during the change phase of an exercise, the asterisk is removed by the computer program and the value is considered to be hard data. However, if the user does not save the changes after an exercise, the old values and the asterisks return.

[6] DIAOLS teletype terminals permit entries in upper or lower case letters. All commands in this manual will appear in upper case letters.

This transfers a copy of the program into the user's working space. Once this command is received, the terminal prints

FILE conprog1 CLASSIFIED UNT

It returns to the margin and prints[7]

READY
*

The user must then enter

RUN*; DIPP/SUBATT; DIPP/SEEK

This command accesses two subroutines that read the DIPPOLS and use it to calculate the force effectiveness measures. The computer then responds with additional system information that the user can ignore. The user must begin exercising the model when the terminal prompts

YOU MUST SPECIFY WHICH DIA ESTIMATES YOU WILL USE

ENTER 'BE' (BEST), 'LO' (LOW), or 'HI' (HIGH).

This is the first subsetting command. When the user types one of the responses, all weapons that appear in either the high, low, or best force level projections, regardless of mode, are indexed.

---

[7] When two lines are printed together in this manual, the reader can assume that the terminal automatically returns to the left-hand margin, prints the second line, and is waiting for an entry by the user.

The terminal then asks the user whether the program's interactive change capability will be used. If this capability is chosen, the user will be permitted to alter any weapons characteristics or number of weapons.[8] The computer asks

DO YOU WANT TO ADD WEAPONS OR MAKE CHANGES IN THE WEAPON NUMBER OR ATTRIBUTES?

The user answers YES or NO.

If NO is entered, no weapons characteristics can be altered in this computer run. This is the "standard run" of the model. If YES is entered, the user is given many options that permit subtle changes in weapons systems and their numbers to be examined. Thus, depending on the analysis planned, the user responds[9]

YES or NO

MAKING A STANDARD RUN: THE NO RESPONSE

Because the model is designed to encourage "hands-on" data manipulation to simulate different assumptions about weapons characteristics and numbers, making model changes is a most important option. If calculations of the high, low, and best estimates of a particular weapons

---

[8] The user should consult the appropriate DIPP sections when planning to use the force effectiveness model. Familiarity with the weapons in each section will result in better, more realistic, and credible estimates.

[9] By answering NO, the user chooses a calculation that is limited to combining only that information on weapons characteristics and numbers that is output into the program from the original data bases.

system are desired, the user need only continue to respond to the series of questions presented by the program. This generates a "standard run."

After typing NO, the computer responds

ENTER TA (TABLE) OR MI (MISSION)

depending upon whether the data are to be grouped by specific DIPP table or by combat mission. If TA is entered, the user is requested to indicate what table is to be used[10]

ENTER TABLE ID

If MI is entered, the user is told to

ENTER MISSION ID

After selecting either the table or the mission, the user specifies whether off-line systems are to be included in the total force effectiveness calculations. The program prompts

DO YOU WANT TO SEE ONLY ON-LINE WEAPONS?

---

[10] A new user may want help at this point. If HELP is typed, a list of table identification numbers that correspond to DIPP table numbers will be printed. If the user asks for help in the mission mode, a description of the five missions is printed.

By answering YES only on-line systems are included. Answering NO includes both on-line and off-line weapons.

The user is next asked to discriminate between nuclear and non-nuclear weapons.[11] The computer asks

DO YOU WANT TO SEE ONLY NUCLEAR WEAPONS?

The user then responds either YES or NO.

The last checkpoint on a standard run announces that some weapons may have estimated data. The user is cautioned so that changes can be made. The computer prints

THERE MAY REMAIN WEAPONS WITH ESTIMATED VALUES
DO YOU WANT TO CHECK THEM?

---

[11] Analysts familiar with the great difficulties involved in generating convincing force effectiveness measures understand the problem of comparing nuclear and non-nuclear explosions. To underscore such difficulties, CACI has given the user an opportunity to input information that is explicitly descriptive of conventional weapons. As a base value to measure the force effectiveness, 0.01 kiloton (KT) was used. This representative number is used only to permit small conventional weapons to be compared to large strategic systems. No claim is made that 0.01 KT is the actual yield of all conventional weapon system firepower. The value most certainly places conventional weapons relative to strategic weapons however.

The user who is working only with conventional weapons might want to make appropriate changes to insert actual values for high explosives (HE). If this course is chosen, the user should ensure that a private file is created to save all changes for futures work since, as designed, the current program purges all changes when the user disconnects from DIAOLS.

If a YES is entered, a table is printed that contains all remaining systems with asterisks (*) to indicate estimated values. A NO results in the question[12]

DO YOU WANT TO MAKE ADDITIONAL CHANGES?

MAKING A SIMULATION RUN: THE YES RESPONSE

Changing data in the force effectiveness model is relatively easy. However, the process of entering changes assumes advanced planning. Hence, thorough preparation is needed before the analyst goes to the terminal to engage in a simulation.

The terminal prompts[13]

DO YOU WANT TO ADD NEW WEAPONS OR MAKE CHANGES IN THE WEAPON NUMBERS OR ATTRIBUTES?

or

DO YOU WANT TO MAKE ADDITIONAL CHANGES?

---

[12] At this point, a standard run can be turned into a simulation. The program lets the user rerun to the beginning of the data change sequence to substitute data that reflect new assumptions.

[13] Regardless of the point at which this capability is entered, the prompting questions are identical for making changes in weapon characteristics or numbers.

Immediately upon indicating with a YES that changes are desired, the weapon identification number is requested[14]

ENTER WEAPON ID

to which the user responds by entering the weapon that is of interest. Next the user is asked

DO YOU WANT TO CHANGE NOS. OF WEAPONS?

This question permits the user to alter the force level data in the working file version of the DIPP to simulate increased or decreased numbers of weapons.[15] If the user responds with YES, the computer prints

NOS. OF YEARS 1972 THROUGH 1981 ARE:

(WEAPON) # # # # # # # # # #

ENTER NEW NOS. FOR 10 YEARS

The user then enters the new force level numbers with a space between each.[16] Having entered these new data, the user has an

---

[14] The weapon identification is identical to the record identifications used by DIPPOLS. Again, the user must know these identification numbers and their locations in DIPP tables or the selected missions. Thus, the importance of having a copy of the appropriate DIPP section during a session is underscored.

[15] The DIPPOLS data are never actually changed. Only a temporary file of data created for the particular computer run is changed.

[16] The user should be particularly careful. If an error occurs in data entry, there is no other opportunity to correct the mistake until the calculation phase has been completed. Since these entries are entered

opportunity to change weapon attributes as the program asks

DO YOU WANT TO CHANGE WEAPON ATTRIBUTES?

If the user answers YES, the computer asks for the attribute name[17]

ENTER ATTRIBUTE NAME

If the user is not familiar with the attributes, the HELP command will produce a list of allowed attribute abbreviations with the following message

ALLOWABLE ATTRIBUTES ARE

WHD YLD LOD CEP REL SPD VUL

The instructions will then be repeated.

ENTER ATTRIBUTE NAME

Whenever an attribute name is entered during a simulation, the computer prints the stored value as a reference point for the user and commands that a new number be entered.

STORED VALUE IS XXXX.XX

ENTER NEW VALUE

---

in a free format, failure to introduce exactly 10 values will generate another designation from the computer (=) to enter more data. Here, the computer is asking for the last value(s) and not for the user to start at the beginning of the data string.

[17] The seven acceptable attribute names are listed on Table 1.

TABLE 1

Sample Output With Estimates Remaining

Weapon	Number of Weapons (WHD)	Yield (YLD)	Load (LOD)	CEP	Reliability (REL)	Speed (SPD)	Vulnerability (VUL)
ABC	XX.XX*	XXXXX.X*	X.X*	XXXX.X	X.XX*	XXXX.X	XX.XX*
DEF	.	.	.	.	.	.	.
GHI	.	.	.	.	.	.	.
JKL	.	.	.	.	.	.	.
MNO	.	.	.	.	.	.	.
PQR	.	.	.	.	.	.	.
STU	.	.	.	.	.	.	.
VWX	XX.XX	XXXXX.X	X.X	XXXX.X*	X.XX	XXXX.X	XX.XX

At this point, the user has reached the lowest level of the program hierarchy. The next available option is to make another attribute change. This opportunity is given with

ENTER ATTRIBUTE NAME

If the user does not want to make changes, a NO is entered and program control automatically moves to the highest level in which individual weapons are selected. This is indicated by the instruction

ENTER WEAPON ID

To escape this level, the user enters NO again. When entered, the user escapes the model's capability. There remains only one more option, adding weapons.[18] The user is asked

DO YOU WANT TO ADD A WEAPON?

If the answer is NO, the user ends the change capability altogether and control is transferred back to the table/mission selection point of the program. Then, questions about table number and mission, on-line/off-line, and nuclear/non-nuclear systems are repeated. Finally, he computer informs the analyst of any estimated values and asks whether they are to be displayed. If so, a table is printed. If not, the user is asked whether additional changes are desired. If YES is entered,

---

[18] Up to five weapons can be added to any table or mission. When adding a weapon, the user must supply data for all weapon attributes and numbers.

the complete change cycle is entered again providing the user with all options previously discussed.

CALCULATING TOTAL FORCE EFFECTIVENESS

When the computer asks

DO YOU WANT TO MAKE ADDITIONAL CHANGES?

and the user answers NO, TWE and TFE measures are calculated. The results are printed for 1972 to 1981. As soon as the table is printed, the user is asked

ANOTHER RUN NOW?

This question provides the user with an opportunity to save the newly introduced changes for another run with the same weapons, or continue to explore entirely different weapons either to make changes or to observe unaltered measures of force effectiveness. When the user has made changes in the data and wishes to continue, the computer asks

DO YOU WANT TO SAVE CHANGES FOR THE NEXT RUN?

Finally, if the user responds NO to the inquiry ANOTHER RUN NOW?, changes are purged automatically and execution ceases. To continue using the model, the program call procedures must be repeated. If the session is over, the user simply signs off from DIAOLS.

SUMMARY

This user's manual introduces intelligence analysts to the procedures for operating the Soviet force effectiveness model. The classification of the DIPPOLS data prohibits including a sample run containing actual data. Therefore, a sanitized mock-up of two computer sessions is provided to give potential users some idea of the format, the options, and the output. Figure 3 presents a standard computer session in which no changes were introduced into the data base. Figure 4 presents a simulation in which yield (YLD) was changed from X.XX to XX.XX. These samples are very simple. The best way to find out what the model does, and can do, is to <u>use it</u>.

```
ENTER 'BE' (BEST), 'LO' (LOW), OR 'HI' (HIGH).
=BE
DO YOU WANT TO ADD NEW WEAPONS OR MAKE CHANGES IN THE
WEAPON NUMBERS OR ATTRIBUTES ?
=NO
ENTER 'TA' (TABLE) OR 'MI' (MISSION)
=TA
ENTER TABLE ID.
=4A
DO YOU WANT TO SEE ONLY ONLINE WEAPONS ?
=NO
DO YOU WANT TO SEE ONLY NUCLEAR WEAPONS ?
=NO
THERE MAY REMAIN WEAPONS WITH ESTIMATED VALUES.
DO YOU WANT TO CHECK THEM ?
=NO
```

WEAPON	72	73	74	75	76	77	78	79	80	
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Delete	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.01	0.
TOTALS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

Figure 3. Computer Session Without Data Changes

```
ENTER 'BE' (BEST), 'LO' (LOW), OR 'HI' (HIGH).
=BE
DO YOU WANT TO ADD NEW WEAPONS OR MAKE CHANGES IN THE
WEAPON NUMBERS OR ATTRIBUTES ?
=YES
ENTER WEAPON ID
Deleted
DO YOU WANT TO CHANGE NOS. OF WEAPONS ?
=NO
DO YOU WANT TO CHANGE WEAPON ATTRIBUTES ?
=YES
ENTER ATTRIBUTE NAME
=CEP
STORED VALUE IS      352.0000
ENTER NEW VALUE
=175.
ENTER ATTRIBUTE NAME
=NO
ENTER WEAPON ID
=NO
DO YOU WANT TO ADD A WEAPON ?
=NO
ENTER 'TA' (TABLE) OR 'MI' (MISSION)
=TA
ENTER TABLE ID.
=1B
DO YOU WANT TO SEE ONLY ONLINE WEAPONS ?
=NO
DO YOU WANT TO SEE ONLY NUCLEAR WEAPONS ?
=NO
THERE MAY REMAIN WEAPONS WITH ESTIMATED VALUES.
```

Table Deleted

```
     TOTALS              Line Deleted
ANOTHER RUN NOW ?
=NO

*
```

Figure 4. Standard Computer Session With Data Changes

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